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**Localized Bose-Einstein Condensation in films of Liquid  $^4\text{He}$  in Disorder** JACQUES BOSSY, Institut Néel, CNRS-UJF, BP 166, 38042 Grenoble Cedex 9, France, JACQUES OLLIVIER, HELMUT SCHOBER, Institut Laue-Langevin, BP 156, 38042 Grenoble, France, HENRY R. GLYDE, Department of Physics and Astronomy, University of Delaware, Newark, Delaware 19716-2593, US — When porous media is only partially filled, the helium is deposited as films on the porous media walls. The initial helium is tightly bound on the media walls, denoted “dead layers”. In subsequent fillings there is a transition to a superfluid phase below a critical temperature  $T_c$  and  $T_c$  increases with increasing filling. We present measurements of phonon-roton modes in liquid  $^4\text{He}$  films on 25 Å diameter gelsil at fillings greater than 70%. P-R modes are observed at low temperature and up to a maximum temperature denoted  $T_{PR}$  which also increases with filling. Above  $T_{PR}$  well-defined P-R modes are not observed. Since well-defined P-R modes exist where there is Bose-Einstein condensation (BEC),  $T_{PR}$  is associated with  $T_{BEC}$ , the critical temperature for BEC in films.  $T_{PR}$  lies above  $T_c$  observed by Yamamoto et al. (Phys. Rev. Lett. 93, 075302 (2004)) in the same gelsil. There is a temperature range  $T_c < T < T_{BEC}$  where there is BEC but no superflow. This is identified as a “localized” BEC region in which the BEC exists in islands or blobs separated by normal liquid. The P-R mode data and LBEC region will be discussed.

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